



How Decision Makers Get...

*"BETTER INFORMATION FASTER"*

## WHITE PAPER

# Is your Data Warehouse an Asset or a Liability?

The DW is the heart of your Business Intelligence solution. Historically, they have been difficult to build and expensive to own. Can a next generation Configurable Data Warehousing technology turn your DW into a business asset?

JANUARY 2007

## **BUSINESS PERFORMANCE INSIGHTS FOR EXECUTIVES**

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There's an often told story of a bank president who called a bomb expert to his office to inspect a suspicious-looking package he had received. After close inspection, the expert confirmed it was indeed what was feared; a bomb. "For \$10,000, I'll defuse it," the expert said. "Ten grand!?" exclaimed the president. "It couldn't possible take that long to cut a couple of wires!" "I don't charge by the hour," he replied. "The \$10,000 is for knowing which wire to cut."

Talk about leverage. Businesses who own BI systems with a custom developed Data Warehouse are dependent on the experts who spent weeks and most likely months developing the ETL code that extracts and consolidates transactional data from their business systems. With the adoption of more and more IT, our dependency on experts for support, changes and upgrades has become an expensive fact of life. When it comes to your Data Warehouse, it doesn't need to be that way.

Today, new software from ProfitBase virtually eliminates the programming element of your DW project, simplifying the complexity and accelerating deployment. With ProfitBase 2007 Management Studio, your DW is quickly and easily configured in a fraction of the time as compared to traditional approaches.

The bottom line is that you end up with a BI solution that's easy to maintain, change and support and your information workers are getting better information faster so they can make better and faster decisions.

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### The Bomb Expert and the ETL Programmer

There's a seldom told story of a Bank President who called an ETL Programmer to his office to inspect a suspicious-looking number he had displayed on his PC screen. After close inspection of the number, the expert confirmed it was indeed what was feared; a bug in the code. "For \$10,000, I'll fix it," the expert said. "Ten grand!?" the president exclaimed. "It couldn't possibly take that long to fix a couple of lines of code?" "I don't charge by the hour," he replied. "The \$10,000 is for knowing which lines of code to fix."

Talk about leverage. The bomb expert had it and so does the Programmer---but not even close to the same degree. Obviously, we are all dependent on experts for one thing or another. Our car mechanics, plumbers, and our systems administrators are all indispensable when there is a problem. Lessening or eliminating that dependency is always beneficial.

### The Hidden Risks of Custom Code

***Custom Data Warehouses have in many ways become a business liability not a business asset!***

So you've received a proposal for a custom data warehouse and it seems reasonable. You're sure the requirements are complete so there won't be any scope changes; and you've checked out the programmers' credentials; checked their references; their development methodologies; documentation practices; and you're getting the source code, just in case. But do you know how long the programmer working on your project plans to be with the firm.

Complex custom software developed with minimal standards can only be efficiently maintained and supported by the programmer who created the code. Additionally, programmers in these types of projects are under time pressures by their managers to complete the project on time. This sometimes means corners are cut, especially in the areas of testing and documentation.

The vast majority of programmers are well intentioned and very competent, but they cannot challenge the fact that you are dependent on them for changes, bug fixes and upgrades for as long as you use the software. Upgrades and changes are inevitable. Your business environment is constantly changing---new competition, products, markets, vendors, acquisitions, mergers, divestments, etc., so your business systems must also change. So, if they decide to take a new position in another firm, you have a problem, not them. Yes, another programmer can study the code and come up to speed over time. Your dependency on the programmer, may not threaten your business, but when they leave it can be painful and expensive.

### Business Systems Pervasive - Data Consolidation Challenges

In the age of acquisitions, consolidation and best of breed IT adoption, most businesses have accumulated and are now dependent on many different business systems. This means important raw performance data is scattered across these systems. Management obtains a somewhat distorted, incomplete and most likely dated picture of performance by piecing together information from each business system. Consolidation of data, using custom ETL code, from just two disparate business systems is a big job, for the following reasons: a) each system has their own proprietary names, data

formats and hierarchy, and b) store the same information, e.g. customer name, but use different naming conventions, e.g. Acme versus Acme Inc. The programmer must design and generate ETL/MDX code to extract the appropriate table-columns from each business system and map the table-columns that have dissimilar names and data formats to a common name and format. The programmer must also generate at least one and probably several data hierarchies for viewing, reporting and analyzing the data, generate and build the OLAP cubes in the solution, automatically update the OLAP cubes with new data; handle exceptions, etcetera. A well designed and coded data warehouse takes time, talent and experience and it requires an ETL/MDX programming expert. That is unless you use the configurable data warehouse!

## ProfitBase 2007 – A Configurable Data Warehouse

Arlene and Jose Ramos, in the late 1970s, coined the term WYSIWYG as an acronym for *What You See Is What You Get*. WYSIWYG was used in computing to describe a system in which content during editing appears very similar to the final product. First referring to word processors, the term is now very appropriate to the *ProfitBase 2007 Management Studio*.

*ProfitBase 2007 Management Studio* allows the user to view the information in each step of the consolidation and transformation process---from the raw data in the business system, to the views in the data warehouse, and the views in the OLAP Cube. We will discuss this further very shortly, but first a few words on OLAP Cubes and metadata.

### Slicing and Dicing Data – OLAP

OLAP is the acronym for On-Line Analytical Processing. Simply put OLAP, supported by a database (e.g. Microsoft SQL Server Analysis Services), Analytical Browsers (e.g. ProClarity); and reporting (e.g. Microsoft Reporting Services) technologies, stores large amounts of information in a special way so the information is retrieved and viewed in many different ways, in essence sliced and diced, very quickly. The OLAP Cube is a snapshot of a set of consolidated and structured data, that can be queried by browsers and reporting systems. OLAP technology came about because of the huge volumes of information that were being generated and the extremely slow retrieval technology of relational database. It has been claimed that for complex queries OLAP is up to 1000 times faster.

### The Power of Metadata – Consolidating Multiple Business Systems

When more than one business system, each with different data formats and naming conventions, must be consolidated then a common standard set of names, i.e. a metadata standard, must be defined. ProfitBase 2007 includes a comprehensive metadata standard, named the Standard Base Format (SBF), for Finance, Sales, etc. that is proven, comprehensive and ready to use.

The ProfitBase SBF has several benefits including fast mapping of business system table-column names, and secondly, that it is an abstraction layer that enables Business Cubes to be designed independent of the business systems in the final solution with the result being reusability. For instance, a Finance Business (OLAP) Cube can be used in one solution with a Microsoft Dynamics GP

(Great Plains) business system and in a second solution the exact same Finance Cube can be used with an Oracle Financials business system.

## WYSIWYG Drag & Drop Data Mapping

The illustration below is one example of how information is viewed at any time and anywhere. The illustration shows the ProfitBase 2007 Management Studio and how business system (Data Source) table-column-names are mapped to the ProfitBase SBF metadata standard. The bottom view displays the business system table; the center display shows the mapping of a business system table-column-name (CUSTNMBR) to a SBF metadata name (CustomerID). The top view shows the resulting table in the data warehouse.

The actual mapping of the table-column-name (CUSTNMBR) is a simple drag a drop task. The system automatically formats the SQL Query needed to retrieve and update the Data Warehouse.

Management Studio also provides for easy browsing and searching of the business system tables to find the right data for mapping.

The screenshot displays the ProfitBase 2007 Management Studio interface. It features three main panes:

- Top Pane (Data Warehouse View):** Shows a table with columns: Data Source ID, Fact Source Table ID, COGS, Company ID, Customer ID, Product ID, Product Qty, Sales, Transdate, and Trans ID. A red box highlights the 'Customer ID' column.
- Center Pane (Column Mapping):** Shows a mapping table with columns: Fact Column, Primary Key / Index, Source Column, and Comments. A red box highlights the 'CustomerID' row, which maps the 'CUSTNMBR' source column to the 'CustomerID' fact column.
- Bottom Pane (Data Source Table View):** Shows a table with columns: DEX\_ROW\_ID, SOPTYPE, SOPNUMBE, LNITMSEQ, DOCDATE, ORDRDATE, RETURDATE, ITEMNMBR, CUSTNMBR, and QUANTITY. A red box highlights the 'CUSTNMBR' column.

Annotations with arrows point to the following elements:

- View of Data Warehouse Using Standard Base Format Names:** Points to the top pane.
- Mapping Data Source Names to the Standard Base Format Names:** Points to the center pane.
- View of Data Source Table Column Names:** Points to the bottom pane.

ProfitBase 2007 Management Studio – WYSIWYG Data Mapping

## Easy Dimension Management

First, a quick tutorial on Dimensions---Dimensional data is the information that gives context to measures, i.e. a metric. For example, \$100 in Revenue is a measure. In itself, the measure is not of much use. That is where dimensional data is helpful. If we said, Division A, had \$100 in Revenue, in March 2005, for Product X, in Region Y, from Customer Z. Now we have context. Everything, except for Revenue, is Dimensional Data.

When more than one business system must be consolidated, some or most of the same dimensional data resides in the business systems with different Identifiers and Names, or maybe with the same Identifiers and Names, or maybe the same Identifiers and different Names, and organized in a hierarchal structure, or maybe not. As Forrest Gump may have once said *"Business Systems are like a box of chocolates, you never know what you're going to get."* The challenge of the Data Warehouse system is to structure the unstructured and clean up the data chaos. As you will see, ProfitBase 2007 makes this easy.

## Order from Chaos

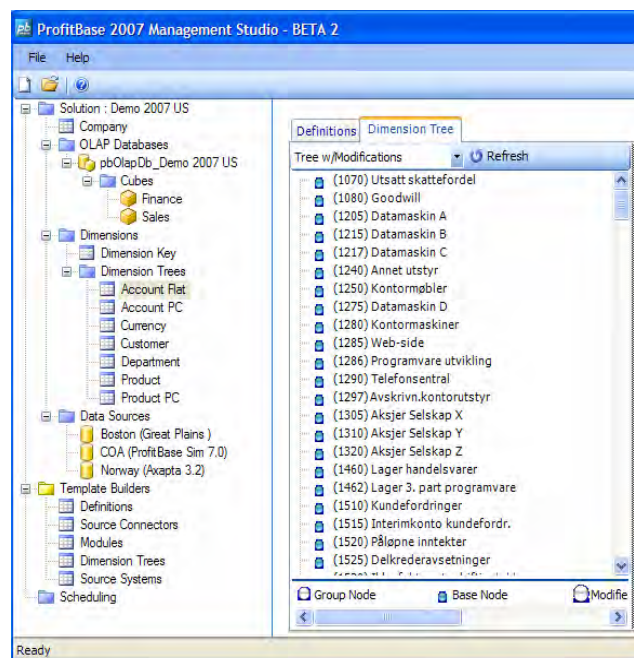
The easiest way to explain the power of ProfitBase 2007 Dimension Management is through a simple yet still challenging example. A company in Boston has acquired a company in Norway. Boston is using Microsoft Dynamics GP (Great Plains) and Norway is using Microsoft Dynamics AX (Axapta). Boston has a Chart of Account (COA) using English names and Norway has a similar COA using Norwegian names. Neither Boston nor Norway has a hierarchal structure in the business system.

The CFO, who is in Boston, wants a consolidated financial statement based on an English COA that used the naming standards and hierarchal structure defined in their budgeting and forecasting system, which is ProfitBase SIM. In actuality, any business system's COA could be used.

To simplify our example, we will only focus on consolidating the Axapta flat structure with the Norwegian names into a hierarchal structure using the COA ID's and Names as defined in ProfitBase SIM. In our example, the COA Identifiers are almost identical in both Boston and Norway.

The screen capture on the right shows our three business systems under the Data Sources folder and Axapta's flat Account structure and the Norwegian Names.

Believe it or not, with ProfitBase 2007 this only takes a few minutes to configure.

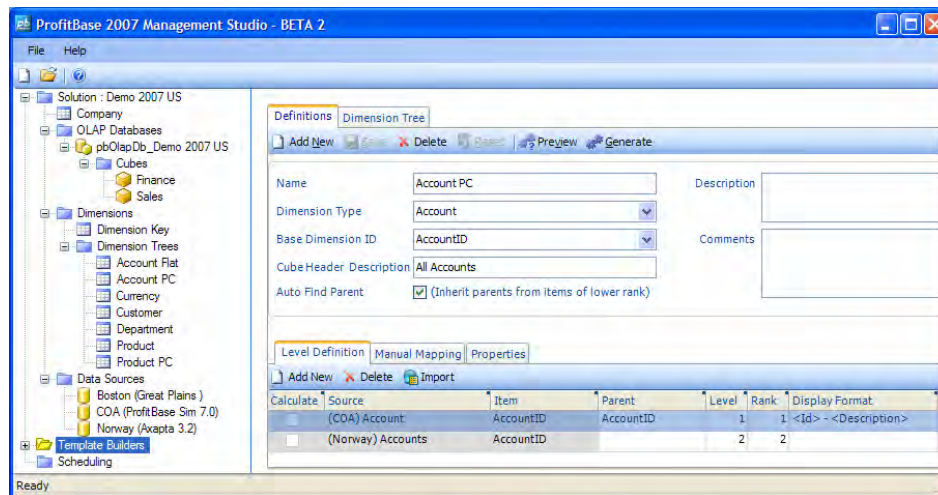


Norwegian COA with Flat Hierarchy



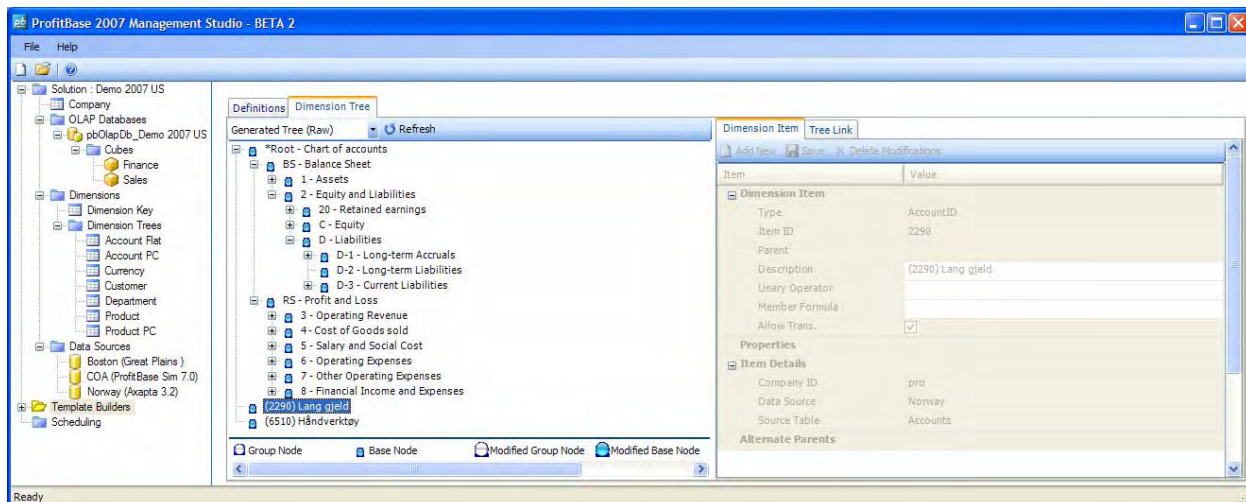
## Ranking the Data Source

In order to make the new consolidated COA based on the ProfitBase SIM COA, the Data Sources (Business Systems) must be assigned to the 'Account' dimension and Ranked. In the screen capture shown below, both COA and Norway Accounts have been assigned to Account PC. Note that COA has been Ranked 1 and Norway 2. This means that the system will automatically defer to the COA Account ID and its name and when consolidated the financials will roll up to the COA Account ID using the English Account Name. Additionally, if there are Accounts in the Norway system, that are not accounted for in the standard COA, then by default the Norway Account number is retained.



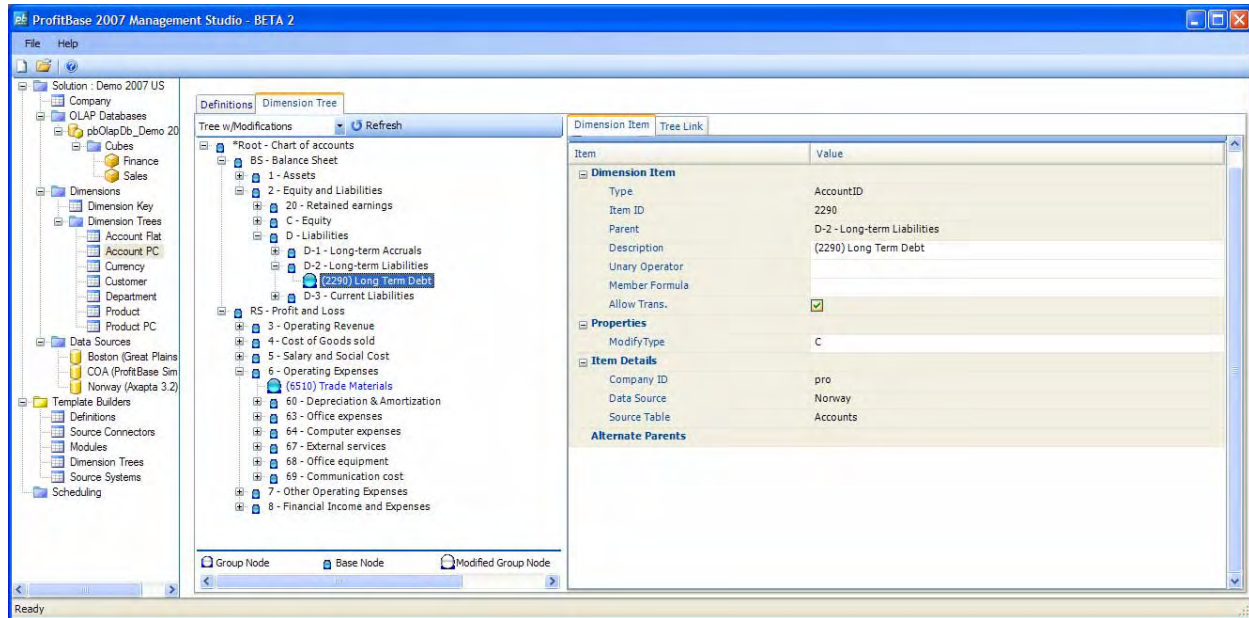
*Assigning and Ranking Data Sources to a Dimension*

The result of processing this new Dimension Tree structure is shown at below. Note that there are two accounts, (2290) Langsiktig gjeld (Long Term Debt) and (6510) Handverktoy (Trade Materials) that do not fall into the standard COA account structure, so they are displayed as remnants and must be renamed and mapped into the COA structure.



*Consolidated Chart of Accounts with remnant accounts*

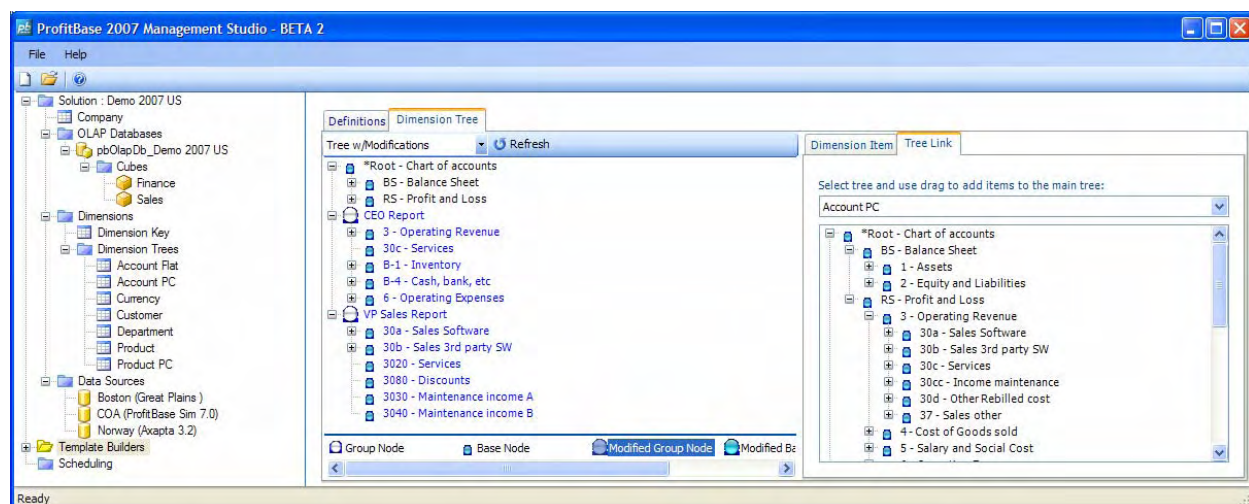
Mapping these two accounts into the COA structure is easily done using drag and drop. The result of the mapping is shown below. Changing the account name into English is as simple as selecting the account and entering a new name. ProfitBase 2007 maintains a copy of the original structure and any changes that were made.



*Consolidated Chart of Accounts with clean-up of remnant accounts*

## Everyone has a point of View

Another important part of dimension management is the ability to create new hierarchal reporting structures using any of the dimensions available. One structure will usually not satisfy all information workers. The CEO's information requirements are different than a Product Line Manager or the VP of



*CEO and VP of Sales Reports using Dimensional Data*



Sales. With ProfitBase 2007, a new report view is created in a matter of minutes, by simply giving the new view a name, creating the hierarchy, then dragging and dropping any of the available dimensions or hierarchy nodes into the structure.

Dimension Management is one of the most challenging aspects of building a Data Warehouse. ProfitBase 2007 has powerful capabilities to extract, consolidated, clean up and organize dimensional data so the information workers can view performance information in the context of their sphere of responsibility. What has been presented in this paper addresses only a portion of the capabilities that ProfitBase 2007 has to offer.

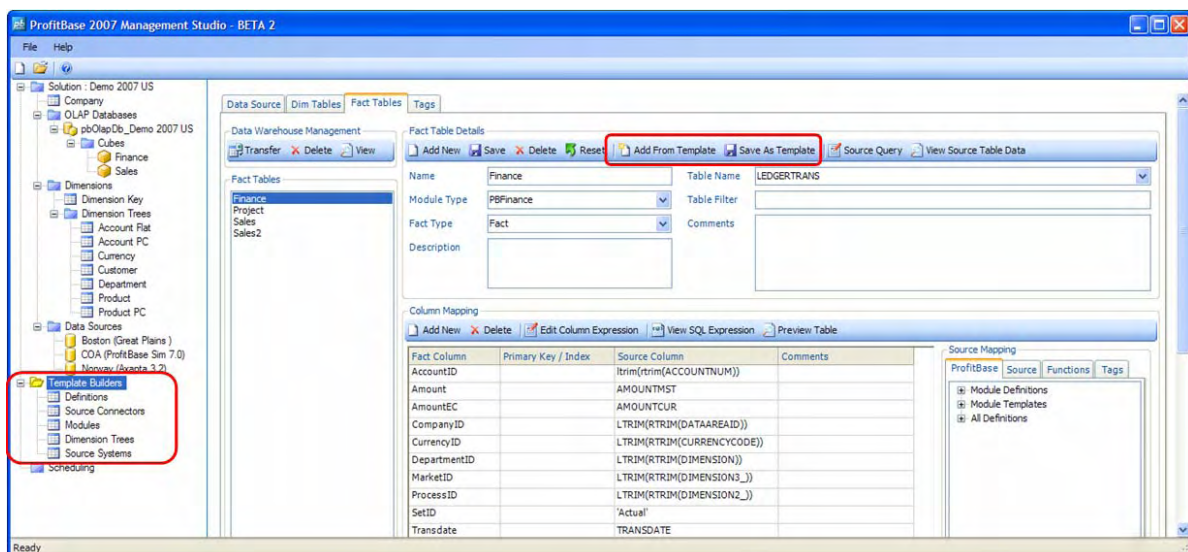
## ***Knowledge is an Asset***

As we move head on into the new century, how we manage our knowledge and know-how becomes more important than ever and should be a top priority for every CEO and CIO. We all live and work in a complex information intensive world where we are more and more dependent on experts. If there is a way to capture, manage and leverage an experts unique knowledge and understanding, then business can turn their intellectual assets into business assets.

While our financial experts have not come to grips on how to measure and account for knowledge-based assets, they are very real and should be managed like any other asset.

## **Ready to Use Templates – IP Capture and Reuse**

Software is one of the best vehicles for the codification and capture of knowledge. ProfitBase 2007 is software that captures the hundreds of thousands of hours of data warehouse and business intelligence experience and knowledge that ProfitBase experts have accumulated over the past 10 years. Additionally, ProfitBase 2007 is a knowledge capture and reuse tool for the businesses who deploy it; capturing business logic, consolidation rules and reporting structures as Business Cube and Data Source Connector templates that can be easily stored, maintained and reused.



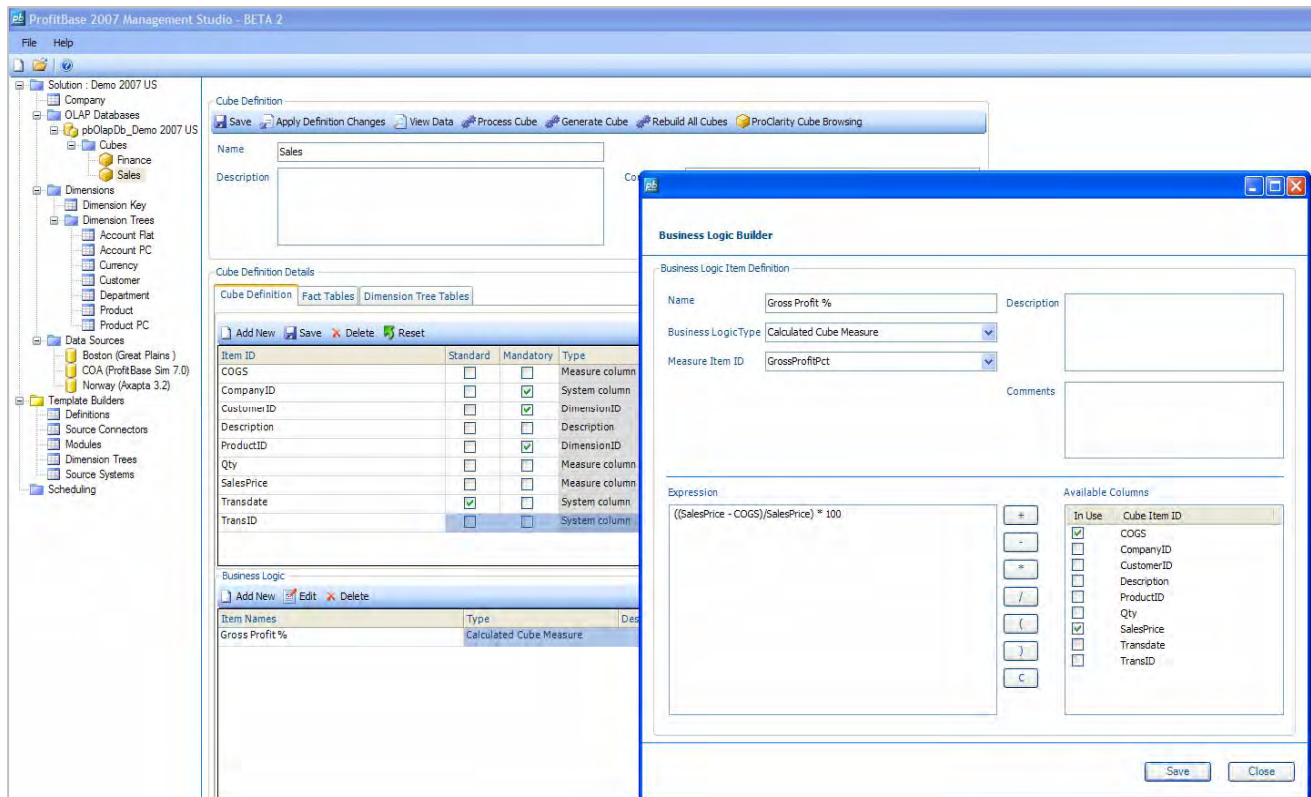
*ProfitBase 2007 Management Studio – Template Management*

## Business Logic – Another Asset

Another form of knowledge is the business logic that is designed to calculate the Key Figures & Ratios (KFR), roll-up numbers and other metrics needed to present business performance. In ProfitBase 2007 there is a library of Key Figures & Ratios which can be used as is or as a building block for your own KFR's. There are KFR's for Sales, Accounts Receivable, Inventory, etc. Hundreds of KFR's can be created, but which ones are important to your business is a decision that requires an analysis of your business objectives and critical success factors.

Business logic in ProfitBase 2007 is applied to the Fact Table Measures. If you remember our earlier tutorial on Dimensions, Revenue was a Measure. Business Logic is defined using the Standard Base Format metadata names which mean the logic is isolated from the proprietary names in your business system. Additionally, there are several points where business logic can be applied in the data warehouse including when raw data is extracted from the business system; when generating the Cube Measures; and when generating Dimension data, e.g. totalizing data.

The screen capture below shows a simple calculation for Gross Profit in Percent using Cost of Good Sold (COGS) and Sales Price. COGS and SalesPrice are Measures in the Sales Fact Table.



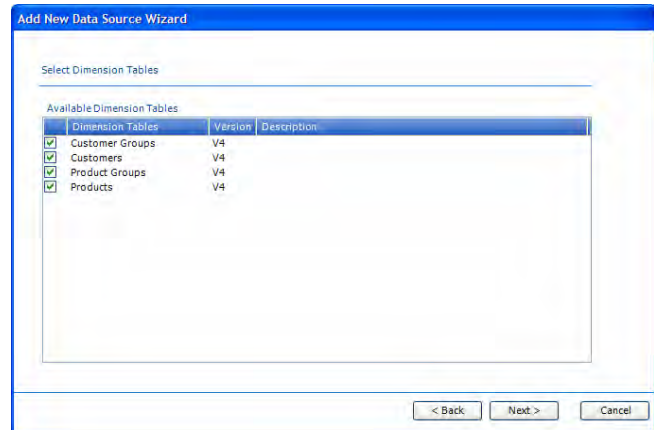
*Business Logic applied to Sales Fact Table*

## Automation Technology Speeds Delivery – Reduces Errors

Wizards, templates and graphic configuration tools offer users speed, flexibility and ease of configuration that custom code cannot deliver. Additionally, solution changes are easy to make and maintainability is improved.

### Wizards work their Magic

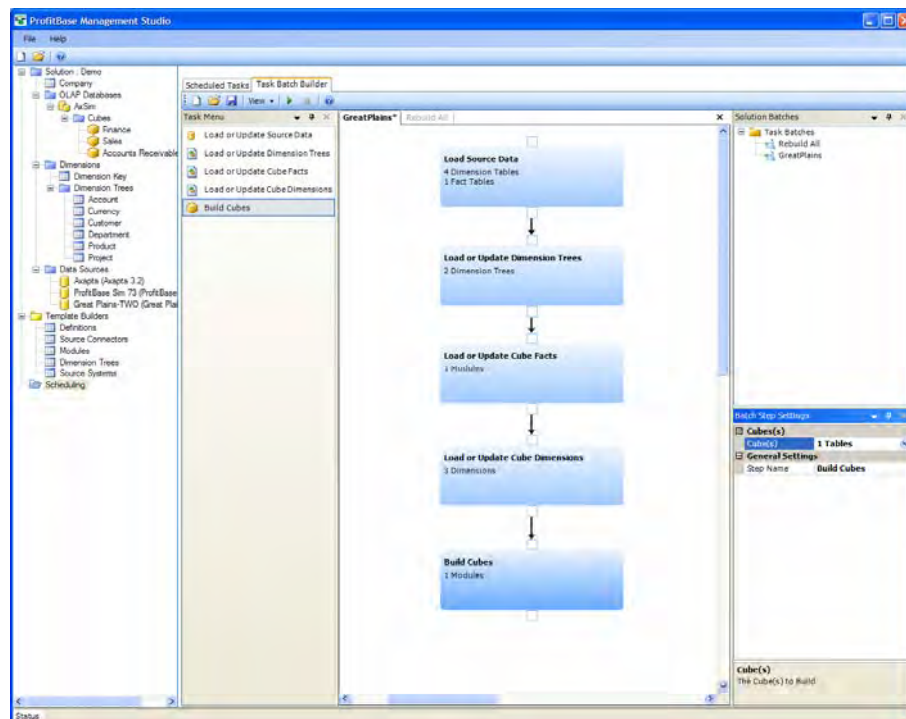
The Microsoft Windows wizard technology is a powerful capability that enables automatic virtually error free configuration. When combined with the ProfitBase ready to use Data Source Connector and Business Cube templates, wizards becomes even more powerful, enabling a user to build a complete data warehouse solution in a matter of minutes.



Add New Data Source Wizard

### Graphical Scheduling of Data Updates

Custom designed ETL code for data updates, is typically fixed, so getting it right the first time is a must. With ProfitBase 2007 Management Studio, a graphical tool is provided for creating and scheduling automatic updates to your Data Warehouse and Business Cubes. Any number of tasks can be easily scheduled for updates every minute, hour, day, week or month.



Graphical Tool for Data Updates

## ***The ETL Programmer and the Business Consultant***

Software is a vehicle for the codification of knowledge for reuse. In the case of BI Data Warehouse solutions, two knowledge domains are needed: business and technical. Technical domain knowledge addresses the aspects of HOW technology (ETL and OLAP) should be used to extract and consolidate disparate data from business systems into a DW. Business domain knowledge addresses the aspects of WHAT information is needed and WHY it is needed, i.e. to improve business processes and performance. No one understands the business better than the people who run the business every day. They are the ideal Business domain experts. External Business Consultants are individuals who also have both business and technical knowledge but not to the level of the internal business experts or the technical experts. But, they are trained to work in both domains. They have the ability, working with the internal business experts, to extract the answers to the WHAT and the WHY very quickly.

ProfitBase 2007 is a tool designed by Business Consultants for Business Consultants. ProfitBase 2007 eliminates the complexities of ETL/MDX coding simplifying the HOW of a project to a straightforward configuration task. The focus now changes from the HOW of building a data warehouse to the WHAT and WHY; the Business Consultant's domain.

## **Summary**

The heart of any BI system is the Data Warehouse. Building a Data Warehouse, where more than one business system must be consolidated, has historically been a long, complex programming challenge requiring experienced and talented ETL/MDX programming experts. As a result, businesses that deploy custom developed Data Warehouses are dependent on their programming experts for changes and upgrades for the life of the software. As a result custom Data Warehouses have become a business liability not a business asset.

ProfitBase 2007 changes everything. With ProfitBase 2007 your Data Warehouse is configured, not programmed, in a fraction of the time, by anyone who understands the information domain of your business. Using an easy to use 'What You See Is What You Get' (WYSISYG) configuration tool, raw data is quickly mapped to the ProfitBase metadata standard; dimensional data is retrieved, cleaned up and hierarchal reporting views are easily created; business and data extraction rules and logic are captured and saved as templates for future reuse. ProfitBase 2007 changes the way Data Warehouses are built, deployed and maintained by reducing and simplifying complexity and turning your Data Warehouse into a business asset that grows in value over time.

## About ProfitBase

ProfitBase, a Microsoft Gold Certified Partner, delivers ready to use business analytics, business system connectivity and a rapid configuration data warehouse that results in faster implementation and deployment of Business Intelligence solutions. ProfitBase's data warehousing product, ProfitBase 2007, provides ready to use Business Cubes for Finance and Sales and Data Source Connectors for Microsoft Dynamics GP, NAV and AX, Oracle Financials and many others, enabling ProfitBase 2007 solutions to be installed and running significantly faster than custom developed data warehouse solutions. ProfitBase solutions leverage the power of Microsoft SQL Server 2005 and Analysis Services to deliver performance information to scorecard, dashboard and reporting systems thereby providing decision makers with one consolidated view of the information they need to quickly analyze their performance and make better, faster decisions. To learn more about ProfitBase visit their website ([www.profitbase.com](http://www.profitbase.com)) or contact Larry LeBlanc (Phone: 717.309.7006 – Email: [larry.leblanc@profitbase.com](mailto:larry.leblanc@profitbase.com)).

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Learn more about how **ProfitBase** can deliver "BETTER INFORMATION FASTER" to your decision makers at [www.profitbase.com](http://www.profitbase.com).



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